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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/670,096	09/26/2000	Linda S. Mansfield	MSU 4.I-526	7494

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12/27/2006

EXAMINER

BASKAR, PADMAVATHI

ART UNIT

PAPER NUMBER

1645

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/27/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/670,096	MANSFIELD ET AL.	
	Examiner	Art Unit	
	Padmavathi v. Baskar	1645	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 06 October 2006.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1,2 and 21 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1,2 and 21 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

- Certified copies of the priority documents have been received.
- Certified copies of the priority documents have been received in Application No. _____.
- Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) Notice of Informal Patent Application

6) Other: _____.

DETAILED ACTION

1. The reply to the office action filed on 10/6/06 is acknowledged.

Status of the Claims

2. Claims 1, 2 and 21 are pending.

Claim Rejections - 35 USC 103 maintained

3. The rejection of claim 1 under 35 U.S.C. 103(a) as being unpatentable over Liang et al 1998 (Infection and Immunity; 66 (5) 1834-1838) or Liang et al 1997 (Analytical Biochemistry; 250 (1) 61-5) each in view of Harlow and Lane 1988 (IDS: Antibodies; especially chapter 5 and 6 Cold Spring Harbor) is maintained as set forth in the previous office action.

Applicant states that according to M.P.E.P. 2143.03, all of the claim limitations must be taught or suggested by the prior art to establish *prima facie* obviousness of a claimed invention and all words in a claim must be considered in judging the patentability of that claim against the prior art.

Liang et al. 1998, Liang et al. 1997, and Harlow and Lane, either taken alone or in combination, do not show or suggest a composition having a mixture of isolated antibodies against a 16 ± 4 kDa antigen and isolated antibodies against a 30 ± 4 kDa antigen. Neither do the cited references show or suggest the mixture of antibodies in a pharmaceutically acceptable carrier.

Contrary to the assertion of Applicant that the literature is "the cited references show or suggest the mixture of antibodies in a pharmaceutically acceptable carrier", the references teach Liang 1998 not only identifies 16KD and 30KD merozoites antigens using serum from infected horses but also suggests that humoral antibody play an essential role in clearing *S.neurona* merozoites (see first paragraph under Discussion) in invitro assay. Liang et al established that antibodies to 16KD antigen neutralize the merozoite infection and antibody

inhibitory activity was correlated with the immunoblot analysis and supports the use of immunoblot test in diagnosis of EPM. However, no inhibitory activity was correlated with antibodies 30KD since 30KD antigen is found immunoreactive with sera from horses with EPM of other *Sarcocystis* species. Thus the prior art clearly suggests that antibodies 16KD antigen could be used in the diagnosis of EPM and identifies the problem of immunoreactivity (cross reactivity) of 30KD antigen with other *Sarcocystis* species. This is a clear motivation to make antibodies to 16KD and 30KD antigen that could distinguish EPM caused by *S.neurona* infection and EPM caused by other Species of *Sarcocystis*. Further, Liang et al identified reactivity of antibodies to 30KD, 16KD, 14KD and 11KD antigens, therefore, it is obvious to one of the ordinary skill in the art to make antibodies to merozoite surface antigens and mixing them together for identifying 30KD, 16KD, 14KD and 11KD antigens. Thus, the examiner has clearly established a *prima facie* obvious over Liang et al 1998 in view of Harlow and Lane by combining the teachings of the prior arts to produce the claimed invention. Thus motivation for combining the prior art references resides in the teachings of Liang.

With respect to Liang et al 1997, 30KD and 19KD antigens were purified from merozoites and have been shown to be reactive to infected horse sera. In this reference, the motivation for making antibody to surface antigens 30 KD or 19KD (in consideration of the discrepancies often encountered in the art between protein molecular weights when determined by different methods, 19KD antigen is considered as 16KD +/- 4) is implicit as one of ordinary skill in the art of Parasitology knows how to make monoclonal or polyclonal antibodies for target surface antigens of merozoites.

The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference and it is not that the claimed invention must be expressly suggested in any one or all of the references; but rather the test is

what the combined teachings of the references would have suggested to those of ordinary skill in the art. In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). The examiner has established a prima facie case of obviousness over Liang 1998 in view of Harlow and Lane or Liang 1997 in view of Harlow and Lane as explained above and in the rejection set forth in the previous office action.

Applicant states that Liang et al 1998 references combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). None of the cited references would motivate a person of skill in the art to combine the teachings of the cited references. In addition, according to Liang et al. 1998, "[a]ntibodies to Sn30 are not recognized as specific since a 30-kDa antigen immunoreactive with sera from horses with EP is found in other *Sarcocystis* spp." (Liang et al. 1998: page 1837, column i, first full paragraph). Since Liang et al. 1998 actually teaches that the Sn30 antibodies are not even recognized as being specific for the 30 kDa antigen from *Sarcocystis neurona*, there would be no reason to believe that the Sn30 antigen is important for immunity.

The examiner disagrees with the applicant because it is noted that Liang's teachings for the first time brought the attention and recognized 30KD antigen is cross reactive with other *Sarcocystis* species. Therefore, one skilled in the Parasitology art immediately understands that this is an important protein and specific monoclonal antibodies could be used to distinguish *S. neurona* from other *Sarcocystis* species. As explained above mixture of specific antibodies to surface antigens 30KD, 16KD are important targets for neutralizing *S. neurona* infection. Therefore, this reference provides clear motivation to the claimed composition

4. The rejection of claims 21 and 2 under 35 U.S.C. 103(a) as being unpatentable over Liang et al 1998 (Infection and Immunity; 66 (5) 1834-1838) and Liang et al 1997 (Analytical

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Biochemistry; 250 (1) 61-5) each in view of Harlow and Lane 1988 (Antibodies; especially chapter 5 and 6 Cold Spring Harbor) is maintained as set forth in the previous office action.

Applicant states according to M.P.E.P 2142 and M.P.E.P 2143.01, none of the cited art teaches, suggests or provides any motivation to one of ordinary skill in the art to combine either with Harlow and Lane to make the Applicant's claimed method.

Applicant's arguments filed on have been fully considered but they are not deemed to be persuasive because the examiner has established a prima facie case of obviousness over Liang 1998 in view of Harlow and Lane or Liang 1997 in view of Harlow and Lane as discussed in the above paragraph # 3 for a composition claim 1. The reasons set forth above also apply to the method claims 2 and 21 as it comprises the composition .

Applicant is misinterpreting the Liang's work as neutralization assays showed differential inhibitory activities. Liang et al established that antibodies to 16KD antigen neutralize the merozoite infection and antibody inhibitory activity was correlated with the immunoblot analysis . However, no inhibitory activity was correlated with antibodies 30KD because horses with EPM are also infected with other *Sarcocystis* species. Thus the prior art clearly suggests that horses infected with other *Sarcocystis* species contain heterogeneous antibodies and therefore, there is a need for making specific (monoclonal) antibodies to *S.neurona* antigens 16KD and 30KD. Therefore, it is obvious to one of the ordinary skill in the art to make antibodies to merozoite surface antigens and use them together to treat horses because the art clearly established antibodies to cell surface antigens neutralize the parasites because the art recognized the importance of humoral antibody in neutralizing the parasites. Thus, the examiner has clearly established a prima facie obvious over Liang et al 1998 in view of Harlow and Lane by combining the teachings of the prior arts to produce the claimed invention. Thus motivation for combining the prior art references resides in the teachings of Liang.

Applicant states that Liang et al in 1997 teach an example for the method of purification of proteins and does not teach or suggest that *Sarcocystis neurona* proteins are important. The examiner disagrees with the Applicant because one skilled in the art of immuno Parasitology knows the importance of specific antibodies to surface proteins are useful to treat or cure the infection caused by *S.neurona*. Thus, the implicit teaching of Liang et al 1998 and 1997 is sufficient enough for one skilled in the art to use specific antibodies for treating an equid.

Applicant states that there is no art, which suggests making antibodies to these antigens, and the motivation for combining with Liang 1998 or Liang 1997 with Harlow and Lane to produce the Applicant's claimed method is a hindsight rejection, which is impermissible.

The examiner disagrees with the Applicant again because the prior art teaches antibodies to merozoite surface proteins have therapeutic value as antibodies neutralized the parasite. The general techniques for making monoclonal antibodies are routine in the art. Liang's 1997 and 1998 teachings are sufficient to support the examiner's position. Therefore, one skilled in the Parasitology art immediately understands that specific monoclonal antibodies to *S.neurona* have therapeutic value. Further, the present specification on page 27 and 34 cites that the techniques for making monoclonal antibodies are well known in the art including the method of Harlow and Lane as applied by the examiner. Thus, the examiner has clearly established a *prima facie* case of obviousness over Liang et al 1998 in view of Harlow and Lane or Liang et al 1997 in view of Harlow and Lane by correctly combining the teachings of the prior art to produce the claimed invention. Thus, it appears that this is not an improper rejection based upon the teachings and suggestions from the prior art.

Remarks

5. Claims 1, 21 and 2 are rejected.

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Conclusion

6 **THIS ACTION IS MADE FINAL.** See MPEP ' 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

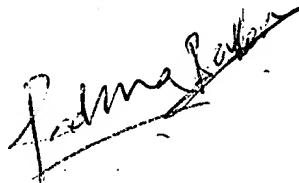
A shortened statutory period for response to this final action is set to expire THREE MONTHS from the date of this action. In the event a first response is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for response expire later than SIX MONTHS from the date of this final action

7. Papers related to this application may be submitted to Group 1600, AU 1645 by facsimile transmission. Papers should be transmitted via the PTO Fax Center, which receives transmissions 24 hours a day and 7 days a week. The transmission of such papers by facsimile must conform to the notice published in the Official Gazette, 1096 OG 30, November 15, 1989. The Right Fax number is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PMR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PMR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PMR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Padma Baskar Ph.D., whose telephone number is ((571) 272-0853. A message may be left on the Examiner's voice mail system. The Examiner can normally be reached on Monday to Friday from 6.30 a.m. to 4.00 p.m. except First Friday of each bi-week.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's acting supervisor, Jeffrey Siew can be reached on (571) 272-0787. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1600.



Padma Baskar Ph.D

SUSAN UNGAR, PH.D
PRIMARY EXAMINER

